REMARKS

In accordance with the foregoing, claims 1-8 are pending and under consideration.

CLAIM REJECTIONS UNDER 35 U.S.C. § 103

Claims 1-3 and 5-7 are rejected under 35 U.S.C. §103(a) as allegedly being unpatentable over U.S. Patent No. 5,506,863 to Meidan et al. (hereinafter "Meidan").

Meidan discloses a communication system using a hopping mechanism which hops communication frames over a plurality of carrier frequencies according to a predetermined hopping pattern. (See Meidan's Abstract.)

Independent claim 1 is directed to a frequency hopping wireless communication method for performing communications between a plurality of wireless communication terminals.

The Office Action alleges that "transmitting a reference local oscillation signal from a transmitting station" as recited in claim 1 is anticipated or rendered obvious by fig 2:200 "base station," col. 7, lines 5-12 "FCCH & SCH" and col. 9 lines 60-64 in Meidan.

According to Meidan "two types of control information which must be acquired by the subscriber unit before the subscriber can access a traffic channel" (see Meidan col. 2, line 66 to col. 3, line 22):

(1) frequency correction information, which is provided in a frequency correction channel (FCCH) and is a sine wave inserted periodically in a time slot in certain frames; and

(2) synchronization information, which is provided in a synchronization channel (SCH) and is a time slot inserted periodically in certain frames.

Meidan specifies that the FCCH is used "by the communication unit to correct its local oscillator to within a range of the base station transmitter's frequency. In addition, this frequency detection will provide a coarse time alignment to the time slot structure. This information is provided on a carrier used by the system, where the carrier is time partitioned into frames and each frame is divided into several time slots." (See Meidan, col. 3 lines 3-12.)

Further Meidan discloses that, in the SCH time slot, accurate timing information is determined by use of a specific synchronization word. The location of the correlation peak for a training sequence within the synchronization word in the SCH may be used to yield timing for the communication system to within a symbol period." (See Meidan, col. 3 lines 3-12.)

Neither the frequency correction information nor the synchronization information of Meidan are a reference local oscillation signal transmitted from a transmitting station.

Element 200 in FIG. 2 of Meidan is a "base site communication unit 200 for use in a slow frequency hopping communication system" (see col. 6, lines 36-39 of Meidan). Meidan, at col. 7, lines 5-12 states:

> In the preferred embodiment, the information bits 102 include control information used by a subscriber communication unit 100 (shown in FIG. 1) to initially synchronize to the SFH communication system, maintain synchronization, and to obtain system information. This control information consists of at least a frequency correction channel (FCCH) and a synchronization channel (SCH).

Control information is not a reference local oscillation. The above-reproduced portion of Meidan (i.e., col. 7 lines 5-12) provides no proof that in Meidan a reference local oscillation signal is transmitted from a transmitting station, as recited in claim 1.

Further, in col. 9 lines 60-64, Meidan states:

> The transmitting portion operates in a substantially similar manner as the base site 200 transmitting portion described above, except that the subscriber unit 100 does not need to provide FCCH and SCH control channels. Information bits 102 are input to the transmitting portion of the subscriber communication unit 100. Information bits 102 may consist of digitized voice, data, or a combination thereof.

The above-reproduced portion of Meidan (i.e., col. 9, lines 60-64) also provides no proof that in Meidan a reference local oscillation signal is transmitted from a transmitting station, as recited in claim 1.

Meidan does not anticipate or render obvious "receiving the reference local oscillation signal from the transmitting station, amplifying and band filtering the received signal, regenerating the reference local oscillation signal by an injection synchronous oscillator or an amplifier in each of the wireless communication terminals."

The Office Action alleges that Meidan, referring to the subscriber communication unit 100 in FIG. 1, discloses or renders obvious the above-identified operation of claim 1. However, in the portions indicated in the Office Action, Meidan refers to processing of a data signal and not of a reference local oscillation signal. Meidan discloses therein using the FCCH and SCH included in the data signal to correct a local oscillation generated by the local oscillator 141. Thus, Meidan does not anticipate or render obvious receiving, amplifying, band filtering and

regenerating **the reference local oscillation signal from the transmitting station**, as recited in claim 1.

Since Meidan does not anticipate or render obvious the above-discussed operations of claim 1, **in absence of the regenerated reference local oscillation** based on the reference local oscillation received from the transmitting station, Meidan cannot anticipate "modulating a transmission signal in a frequency hopping system **using the regenerated reference local oscillation signal**" and "performing mutual communications using the transmission signal which is demodulated in each receiving wireless communication terminal of the plurality of wireless communication terminals **using the regenerated reference local oscillation signal**" (emphasis added).

Therefore, Meidan fails to anticipate or render obvious the method as recited by independent claim 1. Claims 2 and 3 depending from claim 1 patentably distinguish over the prior art at least by inheriting patentable features from independent claim 1.

In view of the above discussion of the prior art teachings, independent claim 5 patentably distinguishes over the prior art at least by reciting:

- **a transmitting station for transmitting a reference local oscillation signal**;
- **a receiving unit that amplifies and band filters a signal received from the transmitting station to regenerate the reference local oscillation signal** by an injection synchronous oscillator or an amplifier, and generates an intermediate frequency band demodulation signal downconverted by multiplying a received radio modulation signal by the reference oscillation signal, and demodulates the intermediate frequency band demodulation signal in the intermediate frequency band modem; and
- a transmitting unit that generates and transmits a radio modulation signal by **multiplying an intermediate frequency band modulation signal from an intermediate frequency band modem by the reference local oscillation signal**. (Emphasis added.)

On page 2, lines 9-10 of the outstanding Office Action, it is stated that "figure 7 in the background of the invention does suggest regenerating a reference signal in order to maintain synchronization." However, a non-limiting embodiment of the frequency hopping wireless communication system is illustrated in FIGS. 1A-C of the application, the IF band modem circuit 31 is the same as in the prior art (see paragraph [0012] of the application specification), but the

reference local oscillation signal is received and regenerated in the rest of the terminal station as described in paragraph [0011] of the application specification. In other words, the reference local oscillation signal is regenerated in other parts of the terminal station than the IF band modem circuit 31 which corresponds to FIGS. 6 and 7 of the application that are related to the prior art.

Claims 6 and 7 depending from claim 5 patentably distinguish over the prior art at least by inheriting patentable features from claim 5.

Claims 4 and 8 are rejected under 35 U.S.C. §103(a) as being unpatentable over Meidan in view of U.S. Patent No. 6,130,905 to Wakayama ("Wakayama") and the article ""Proposal of Millimeter-wave Self-heterodkyne Communication System", Communications Research Laboratory, Ministry of Posts and Telecommunications, June 2000 to Yozo Shoji et al. ("Shoji").

Independent claim 4 patentably distinguishes over the prior art at least by reciting "simultaneously transmitting a frequency hopping radio modulation signal of a single-side band wave or a both-side band wave obtained by the upconverting, and the local oscillation signal used in the upconverting." Applicants found no evidence in the portions of Meidan indicated in the Office Action, the whole Meidan disclosure and the cited references, that the above-identified features are anticipated or rendered obvious.

The Office Action acknowledges that "Meidan fails to teach downconverting a received signal by the receiving unit to a first intermediate frequency band signal using a local oscillation signal frequency hopping in a pattern obtained by adding a fixed frequency offset to a frequency hopping pattern corresponding to a desired reception wave, and then extracting two signal components, a local oscillation signal component that is the local oscillation signal used in the upconverting the modulation signal, and a modulation signal component, by passing the downconverted signal through a band pass filter."

However, the Office Action relies on Meidan to **suggest** these missing features. Applicants respectfully disagree that Meidan's teachings suggest the missing features. In particular, Applicants respectfully submit that Meidan does not suggest "extracting two signal components, a local oscillation signal component that is the local oscillation signal used in the upconverting the modulation signal, and a modulation signal component, by passing the downconverted signal through a band pass filter" as recited in claim 1. The Office Action alleges that the signal input to the FCCH, SCH detector 142 from the down-converter 122 corresponds to the recited "a local oscillation signal component that is the local oscillation signal used in the upconverting the modulation signal" and that the input from the demodulator 124 to the down-

converter 122 corresponds to the recited "a modulation signal component, [extracted] by passing the downconverted signal through a band pass filter."

Meidan discloses that "a down-converter 122 converts the received signal to an intermediate frequency (IF) which can more easily be manipulated by other receiver components. This down-converted received signal is then input to a FCCH, SCH detector 142." See col. 8 lines 14-18 of Meidan. However, the received signal in Meidan is a data signal and not a local oscillation component representing the signal used in the upconverting. In fact, in Meidan the frequency hopping radio modulation signal, and the local oscillation signal used in the upconverting are not simultaneously transmitted. Thus, a non-existent signal cannot be extracted.

Further, the signal input from the demodulator 124 to the down-converter 122 is NOT obtained by passing the downconverted signal through a band pass filter. Since in Meidan, the frequency hopping radio modulation signal and the local oscillation signal used in the upconverting are not simultaneously transmitted, there is no reason to extract the frequency hopping radio modulation signal by eliminating the local oscillation signal used in downconverting using a band filter.

The Office Action asserts that "it is inherent and well known the use of band filters at the receiving end." This general statement does not render obvious that the modulation signal component is extracted "by passing the downconverted signal through a band pass filter", particularly when in Meidan , the frequency hopping radio modulation signal, and the local oscillation signal used in the upconverting are not simultaneously transmitted.

Applicants found no evidence that the other cited references Wakayama (which actually is not used to support the rejection) and Yozo correct or compensate for the above-identified failure of Meidan to anticipate or render obvious the features that the Office Action alleges to render obvious.

In the previous Office Action, Applicants Admitted Prior Art (AAPA) was used to reject claims 4 and 8. Although a new rejection based only on Meidan is set forth in the outstanding Office Action, in the "Response to Remarks" section, it is asserted that "furthermore, this figure (fig.7) is almost exactly as figure 4 in applicant's claimed invention, and the only difference is that figure 7 does not have the offset unit." (See Office Action, page 2, lines 11-12).

However, in FIG. 6 of the application which illustrated the prior art, a frequency hopping radio modulation signal is passed through a band pass filter 5, and is transmitted from a transmitting antenna 6. That is, a local oscillation signal is removed. On the contrary, in FIG. 3

of the application illustrating a non-limiting embodiment, the output includes an output signal of a hopping synthesizer used as a local oscillation signal in addition to the radio signal of a both-side band wave (or a single-side band wave) whose frequency is converted as illustrated in FIG. 5 of the application. These signals are amplified by an amplifier 39, and transmitted through an antenna 40.

In a receiver, both of the local oscillation signal and the radio signal of a both-side band wave (or a single-side band wave) are received and input to a mixer 44. Furthermore, the mixer 44 receives an output signal of a hopping synthesizer 47 controlled by a signal obtained by adding to a hopping pattern generator 45 a fixed frequency offset signal by an offset signal generator 46. As a result, a signal downconverted to a first IF band without frequency hopping corresponding to the offset signal with a radio frequency band signal maintaining the relative spectrum relationship appears in the output of the mixer 44.

Thus, although the ground of rejection based on AAPA was abandoned in the outstanding Office Action, Applicants respectfully traverse the rejection based on the prior art based on the previously presented arguments and the above remarks.

In view of at least the above arguments, independent claim 4 patentably distinguishes over the prior art.

In view of the above discussion of the prior art teachings, independent claim 8 patentably distinguishes over the prior art at least by reciting:

- transmitting unit [...] simultaneously transmits a frequency hopping radio modulation signal of a single-side band wave or a both-side band wave obtained by the upconversion and the local oscillation signal used in the upconversion; and
- the receiving unit [...] extracts two signal components, that is, a local oscillation signal component that is the local oscillation signal used in the upconverting the modulation signal, and a modulation signal component, by passing the downconverted signal through a band pass filter.

CONCLUSION

There being no further outstanding objections or rejections, it is submitted that the application is in condition for allowance. An early action to that effect is courteously solicited.

Finally, if there are any formal matters remaining after this response, the Examiner is requested to telephone the undersigned to attend to these matters.

If there are any additional fees associated with filing of this Amendment, please charge the same to our Deposit Account No. 19-3935.

Respectfully submitted,

STAAS & HALSEY LLP

Date: Sept. 3, 2009

By: L Todor

Luminita A. Todor
Registration No. 57,639

1201 New York Avenue, N.W., 7th Floor
Washington, D.C. 20005
Telephone: (202) 434-1500
Facsimile: (202) 434-1501